FIG. 1

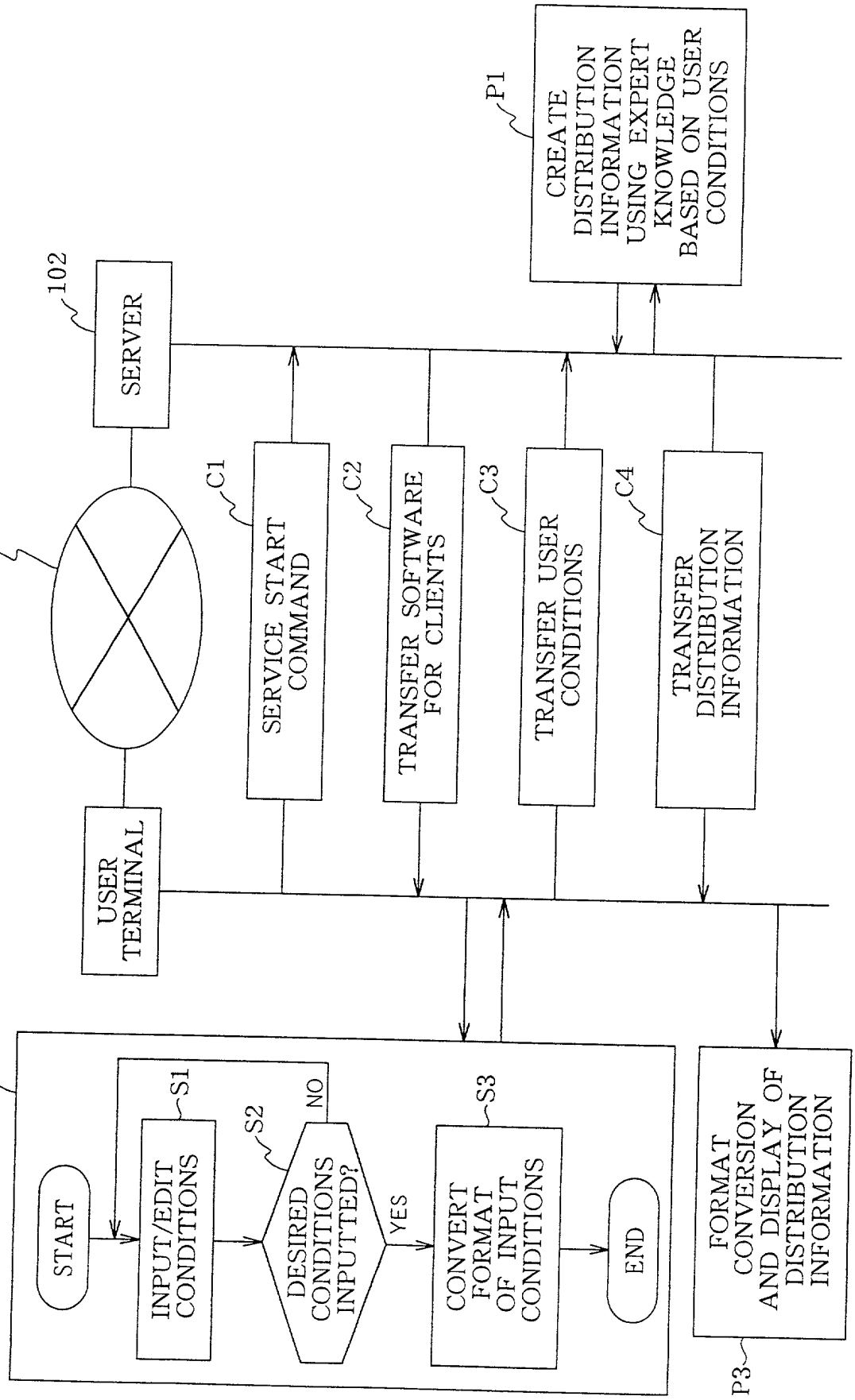

101 INTERNET
102
SERVER
USER TERMINAL
C1
SERVICE START COMMAND
C2
TRANSFER SOFTWARE FOR CLIENTS
C3
TRANSFER USER CONDITIONS
C4
TRANSFER DISTRIBUTION INFORMATION
P1
CREATE DISTRIBUTION INFORMATION USING EXPERT KNOWLEDGE BASED ON USER CONDITIONS
P2
START
S1
INPUT/EDIT CONDITIONS
S2
DESIRED CONDITIONS INPUTTED?
NO
YES
S3
CONVERT FORMAT OF INPUT CONDITIONS
END
P3
FORMAT CONVERSION AND DISPLAY OF DISTRIBUTION INFORMATION

FIG.2

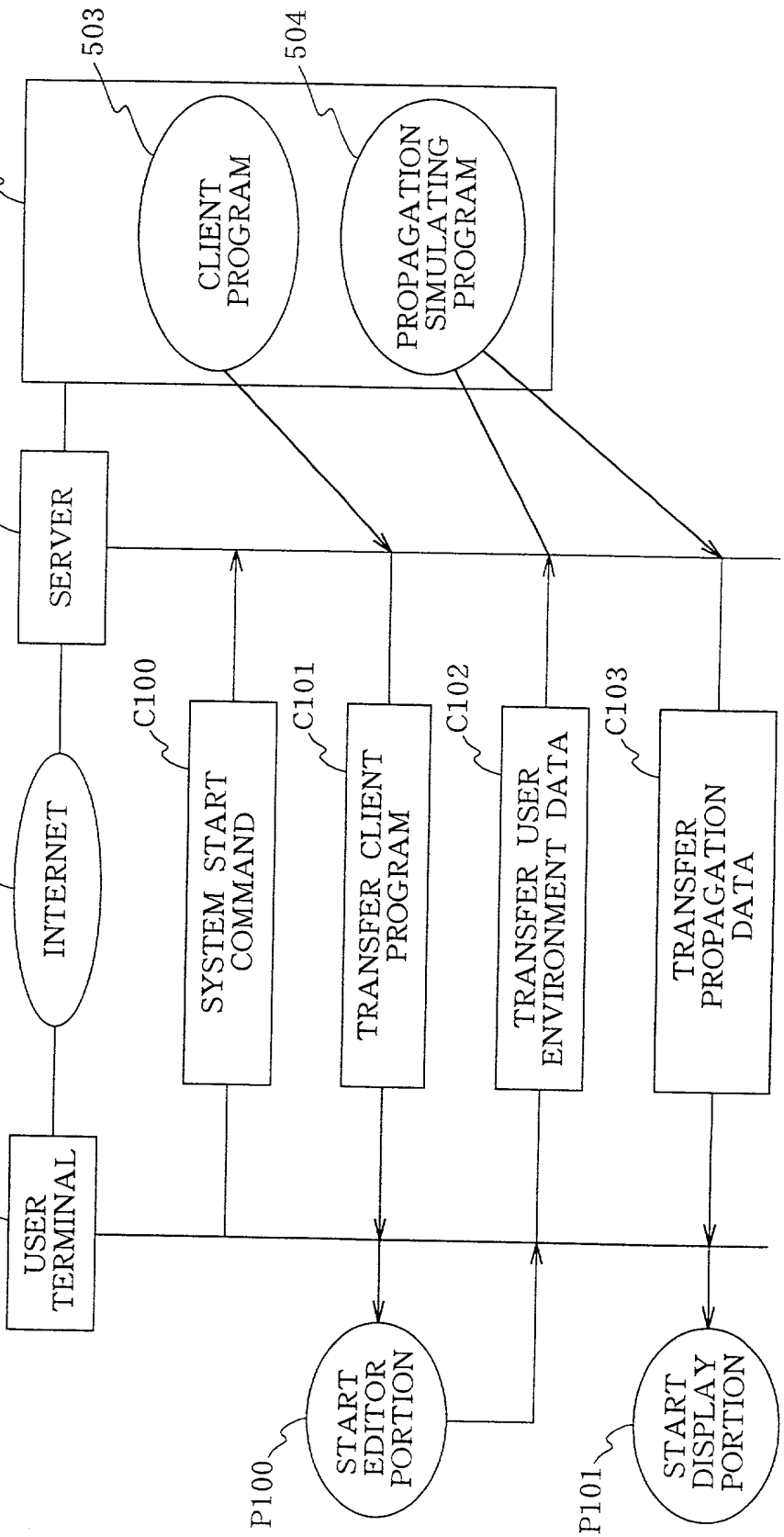
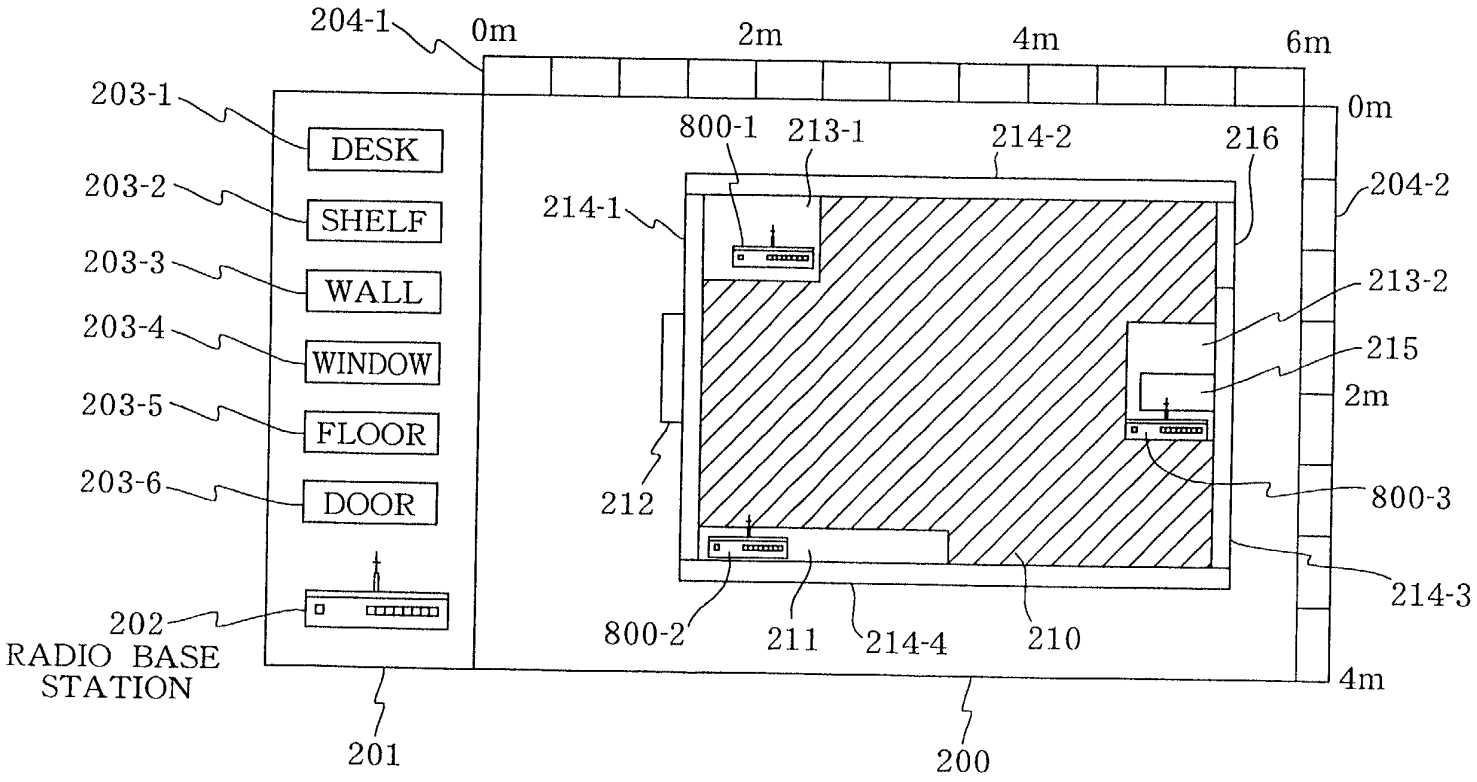

500
USER TERMINAL
501
INTERNET
502
SERVER
503
505
CLIENT PROGRAM
504
PROPAGATION SIMULATING PROGRAM
C100
SYSTEM START COMMAND
C101
TRANSFER CLIENT PROGRAM
C102
TRANSFER USER ENVIRONMENT DATA
C103
TRANSFER PROPAGATION DATA
P100
START EDITOR PORTION
P101
START DISPLAY PORTION

FIG.3


204-1
0m
2m
4m
6m
203-1
DESK
203-2
SHELF
203-3
WALL
203-4
WINDOW
203-5
FLOOR
203-6
DOOR
202
RADIO BASE STATION
201
800-1
213-1
214-2
216
214-1
204-2
213-2
215
2m
212
800-3
214-3
800-2
211
214-4
210
0m
4m
200

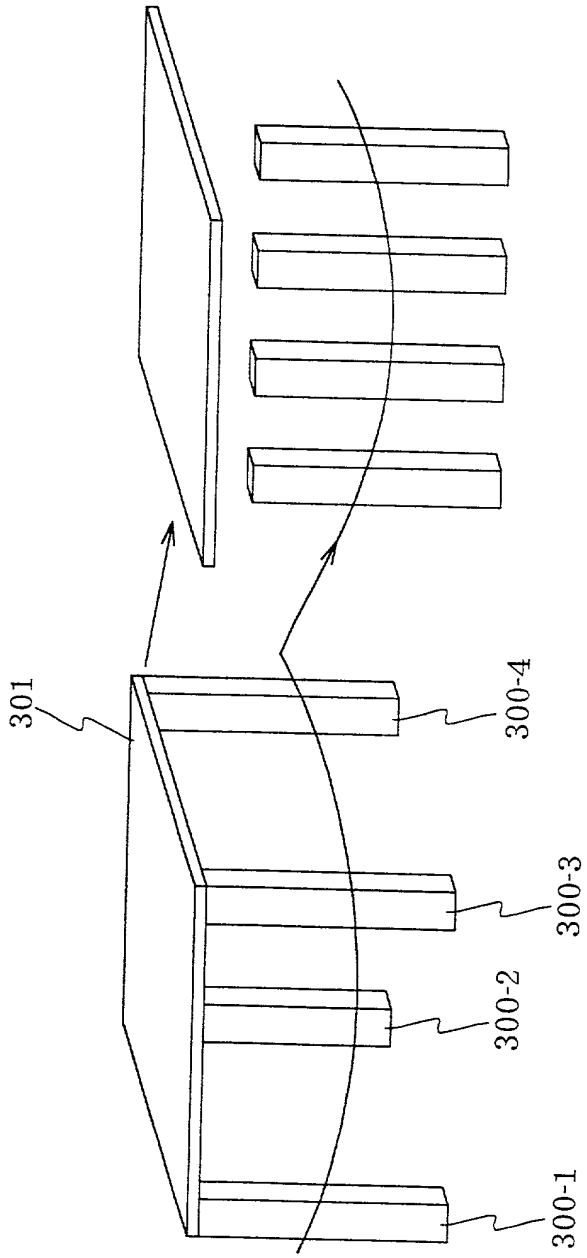


FIG.4

FIG.5

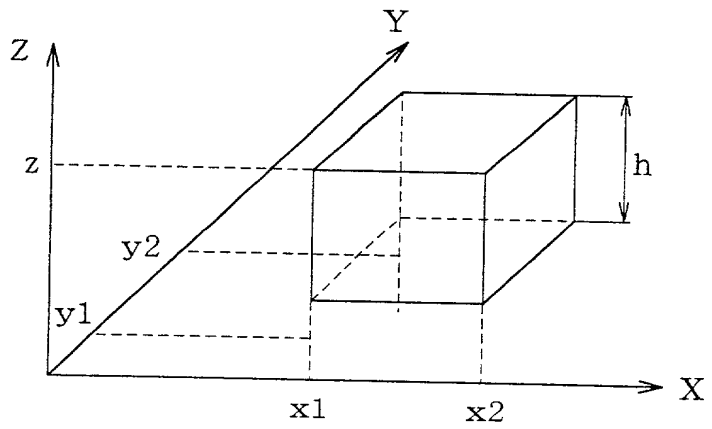


FIG.6

POSITION (METER)						MATERIAL
x1	x2	y1	y2	z	h	
1.5	2.1	1.2	1.2	1.2	0.05	METAL
1.5	1.6	1.2	1.3	1.15	0.8	TIMBER
⋮	⋮	⋮	⋮	⋮	⋮	⋮
2.0	2.1	1.2	1.3	1.15	0.8	TIMBER

FIG.7

POSITION(METER)			ANTENNA	SENDING ELECTRIC POWER
x	y	z		
3.0	1.5	1.0	DIBALL	100mW

FIG. 8

DELAY VARIANCE ↑		RECEIPT ELECTRIC POWER THRESHOLD VALUE 1	RECEIPT ELECTRIC POWER THRESHOLD VALUE 2	RECEIPT ELECTRIC POWER THRESHOLD VALUE 3 → RECEIPT ELECTRIC POWER
DELAY VARIANCE THRESHOLD VALUE 3	IMPOSSIBLE	IMPOSSIBLE	POSSIBLE	POSSIBLE
DELAY VARIANCE THRESHOLD VALUE 2	IMPOSSIBLE	POSSIBLE	GOOD	GOOD
DELAY VARIANCE THRESHOLD VALUE 1	POSSIBLE	GOOD	VERY GOOD	VERY GOOD
	POSSIBLE	GOOD	VERY GOOD	VERY GOOD

FIG.9

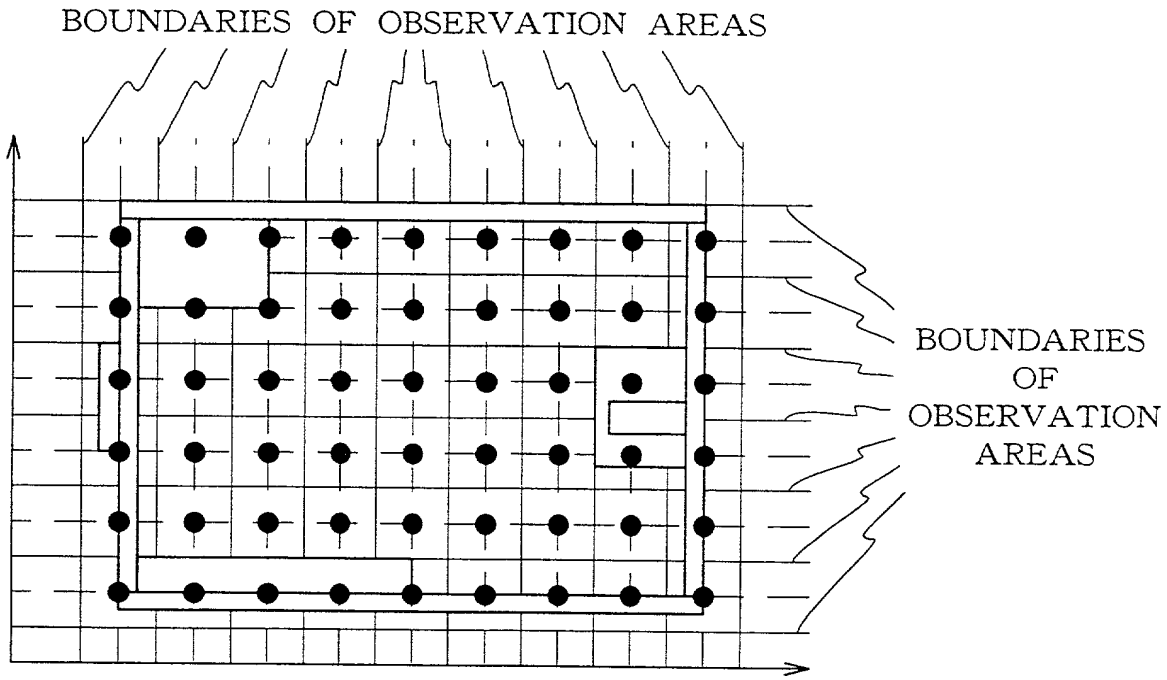


FIG.10

OBSERVATION AREA					COMMUNICATION POSSIBILITY
HEIGHT ABOVE FLOOR	x1	x2	y1	y2	
100 cm	0 cm	10 cm	0 cm	10 cm	IMPOSSIBLE
	0 cm	10 cm	10 cm	20 cm	POSSIBLE
	0 cm	10 cm	20 cm	30 cm	GOOD
	0 cm	10 cm	30 cm	40 cm	VERY GOOD
	⋮	⋮	⋮	⋮	⋮

FIG.11

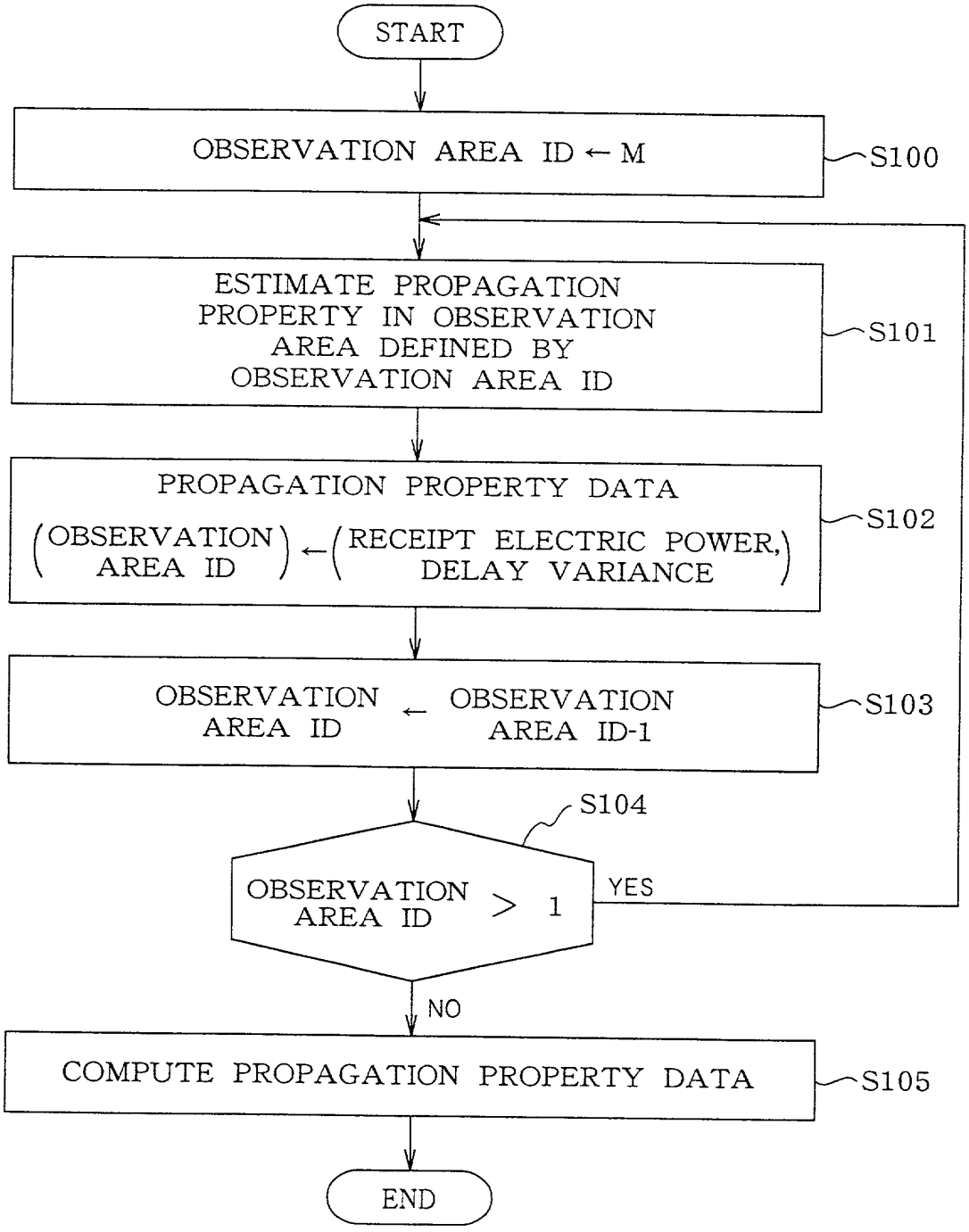

START
OBSERVATION AREA ID ← M
S100
ESTIMATE PROPAGATION PROPERTY IN OBSERVATION AREA DEFINED BY OBSERVATION AREA ID
S101
PROPAGATION PROPERTY DATA
(OBSERVATION AREA ID) ← (RECEIPT ELECTRIC POWER, DELAY VARIANCE)
S102
OBSERVATION AREA ID ← OBSERVATION AREA ID-1
S103
S104
OBSERVATION AREA ID > 1
YES
NO
COMPUTE PROPAGATION PROPERTY DATA
S105
END

FIG.12

OBSERVATION AREA ID	RECEIPT ELECTRIC POWER	DELAY VARIANCE
1	−60 dBm	20 NANOSECONDS
2	−65 dBm	150 NANOSECONDS
3	−68 dBm	30 NANOSECONDS
4	−72 dBm	200 NANOSECONDS
5	−88 dBm	20 NANOSECONDS
⋮	⋮	⋮
M		

FIG.13

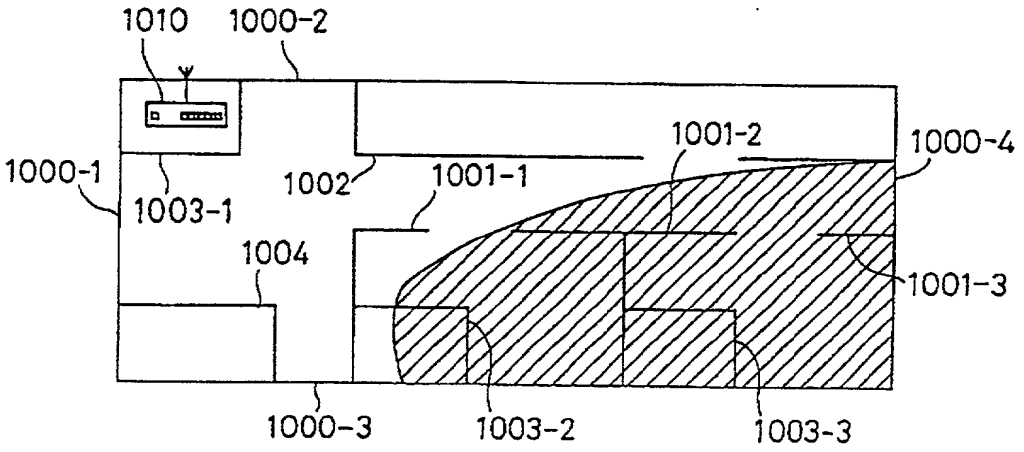


FIG.14

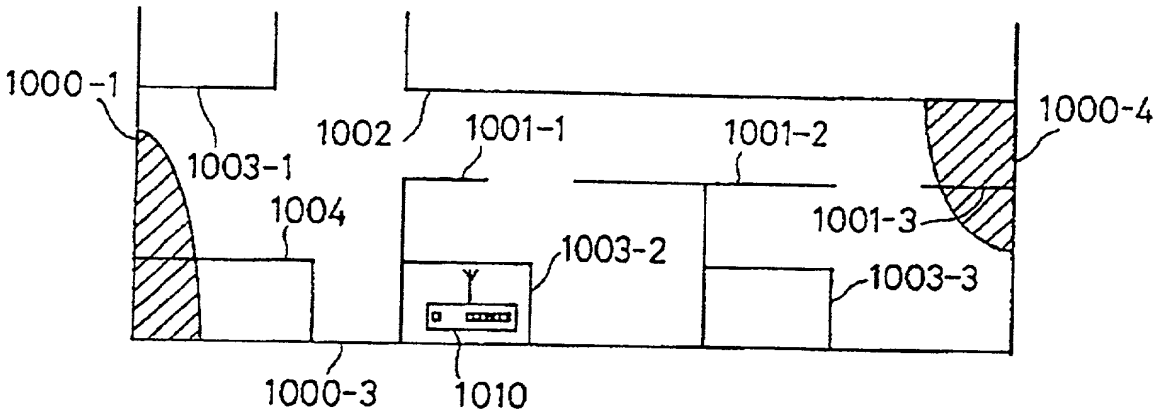

1000-1
1003-1
1002
1001-1
1001-2
1000-4
1004
1001-3
1003-2
1003-3
1000-3
1010

FIG. 15

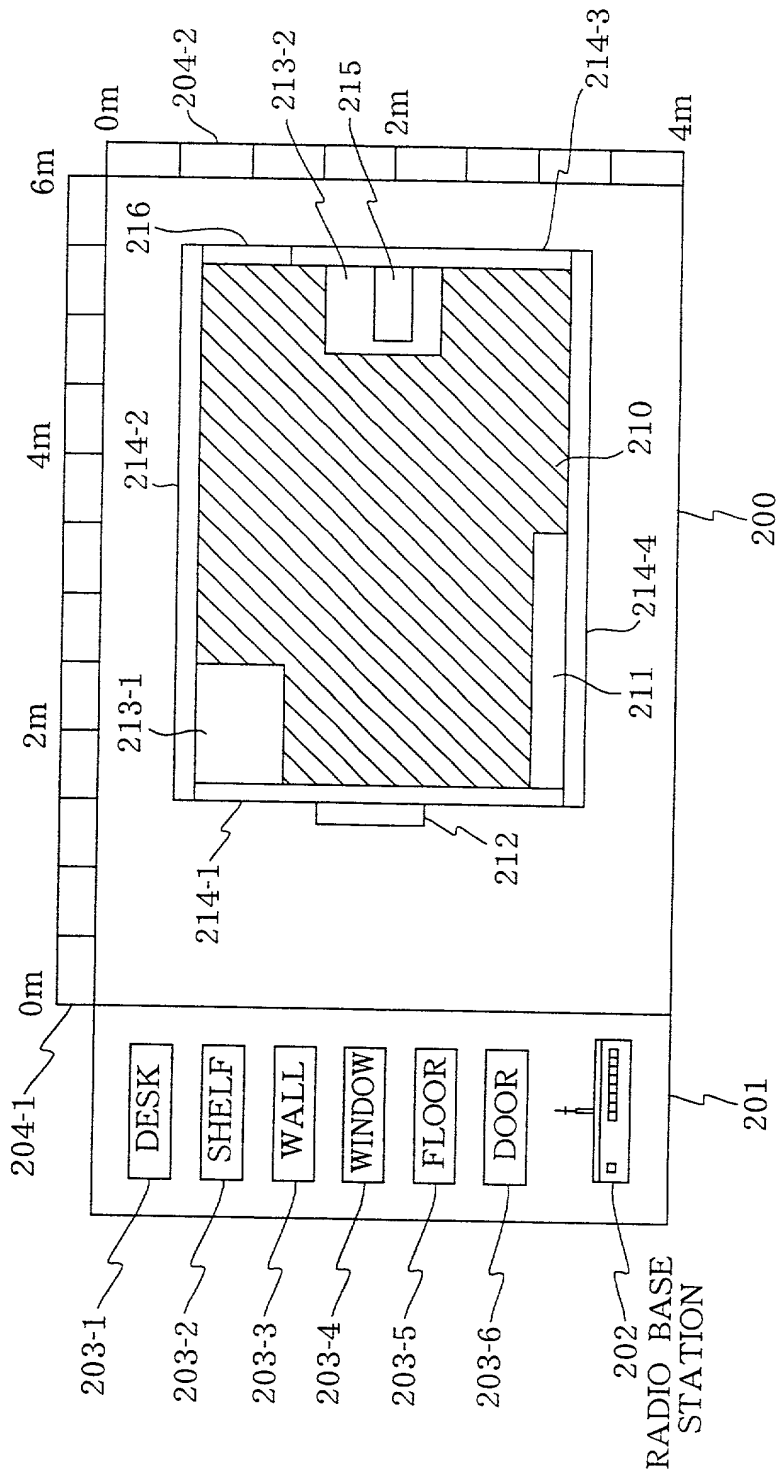

0m
2m
4m
6m
0m
2m
4m
204-1
204-2
213-1
213-2
214-1
214-2
214-3
214-4
215
216
210
211
212
200
201
DESK
SHELF
WALL
WINDOW
FLOOR
DOOR
203-1
203-2
203-3
203-4
203-5
203-6
202
RADIO BASE STATION

FIG.16

TYPE OF SYSTEM	POSITION (METER)			ANTENNA	SENDING ELECTRIC POWER
	x	y	z		
HIGH SPEED WIRELESS LAN	2.0	1.0	1.0	DIBALL	100 mW
SHORT RANGE RADIO	3.0	2.0	1.0	DIBALL	1 mW
MICROWAVE OVEN	1.0	1.5	1.0	---	20 mW

FIG.17

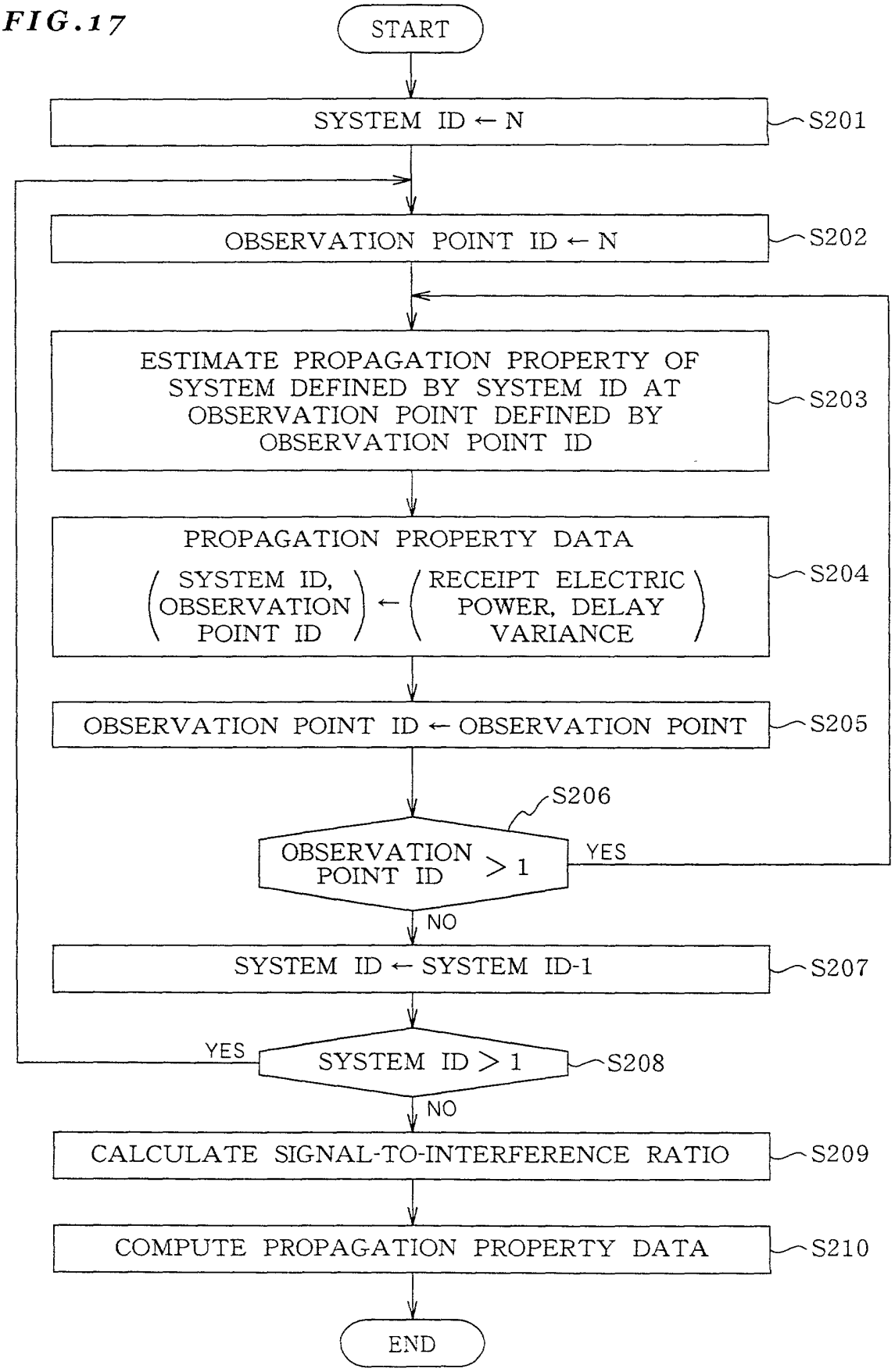

START
SYSTEM ID ← N
S201
OBSERVATION POINT ID ← N
S202
ESTIMATE PROPAGATION PROPERTY OF SYSTEM DEFINED BY SYSTEM ID AT OBSERVATION POINT DEFINED BY OBSERVATION POINT ID
S203
PROPAGATION PROPERTY DATA
(SYSTEM ID, OBSERVATION POINT ID) ← (RECEIPT ELECTRIC POWER, DELAY VARIANCE)
S204
OBSERVATION POINT ID ← OBSERVATION POINT
S205
S206
OBSERVATION POINT ID > 1
YES
NO
SYSTEM ID ← SYSTEM ID-1
S207
YES
SYSTEM ID > 1
S208
NO
CALCULATE SIGNAL-TO-INTERFERENCE RATIO
S209
COMPUTE PROPAGATION PROPERTY DATA
S210
END

FIG.18

OBSERVATION POINT ID	SYSTEM ID=1		SYSTEM ID=2		SYSTEM ID=3	
	RECEIPT ELECTRIC POWER	DELAY VARIANCE	RECEIPT ELECTRIC POWER	DELAY VARIANCE	RECEIPT ELECTRIC POWER	DELAY VARIANCE
1	−60 dBm	20 NANO SECONDS	−88 dBm	20 NANO SECONDS	−88 dBm	120 NANO SECONDS
2	−65 dBm	150 NANO SECONDS	−88 dBm	40 NANO SECONDS	−90 dBm	80 NANO SECONDS
3	−68 dBm	30 NANO SECONDS	−70 dBm	80 NANO SECONDS	−88 dBm	80 NANO SECONDS
4	−72 dBm	200 NANO SECONDS	−88 dBm	60 NANO SECONDS	−86 dBm	100 NANO SECONDS
5	−88 dBm	20 NANO SECONDS	−70 dBm	20 NANO SECONDS	−88 dBm	80 NANO SECONDS
• • • •	• • • •	• • • •	• • • •	• • • •	• • • •	• • • •
M						

FIG.19

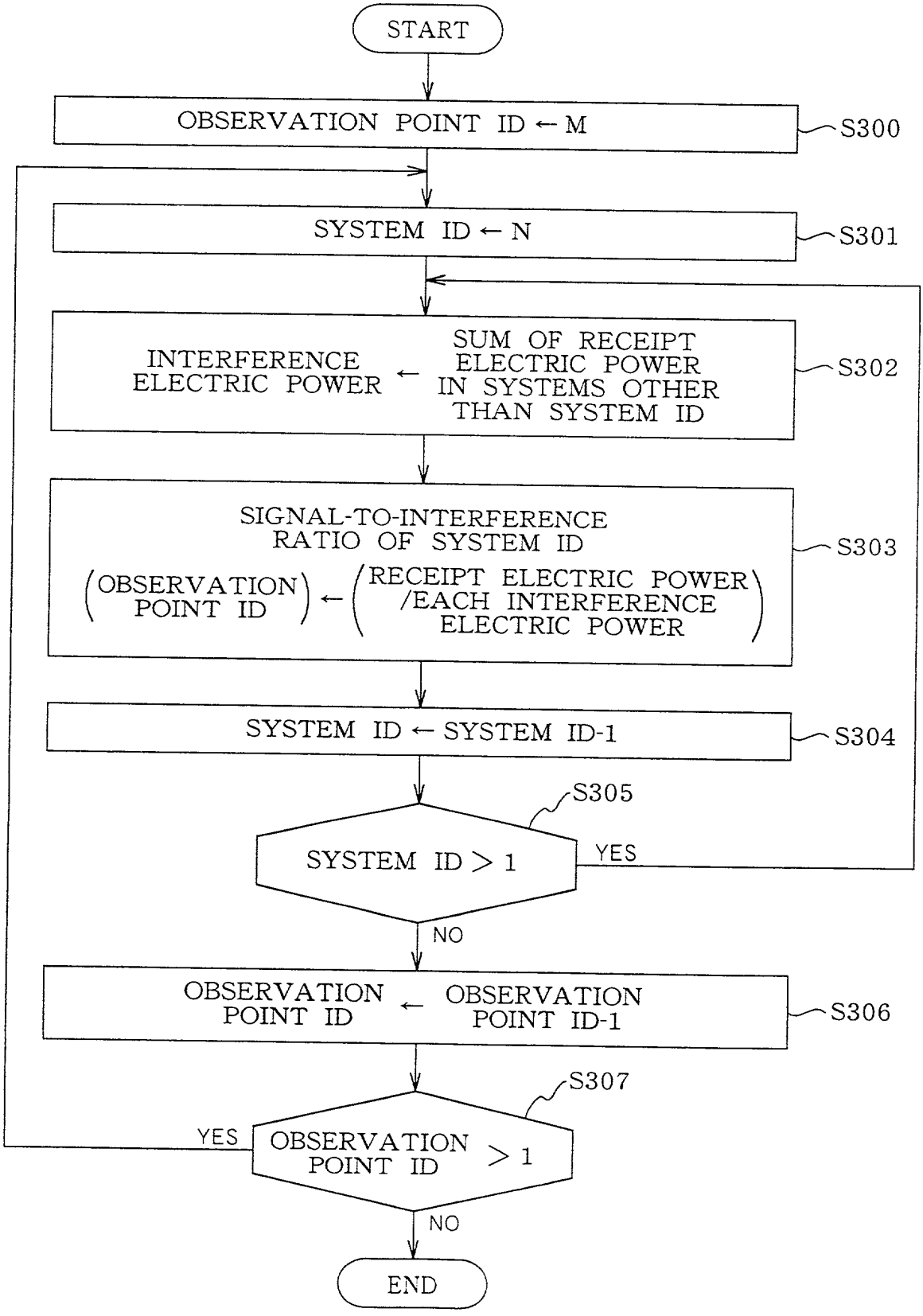
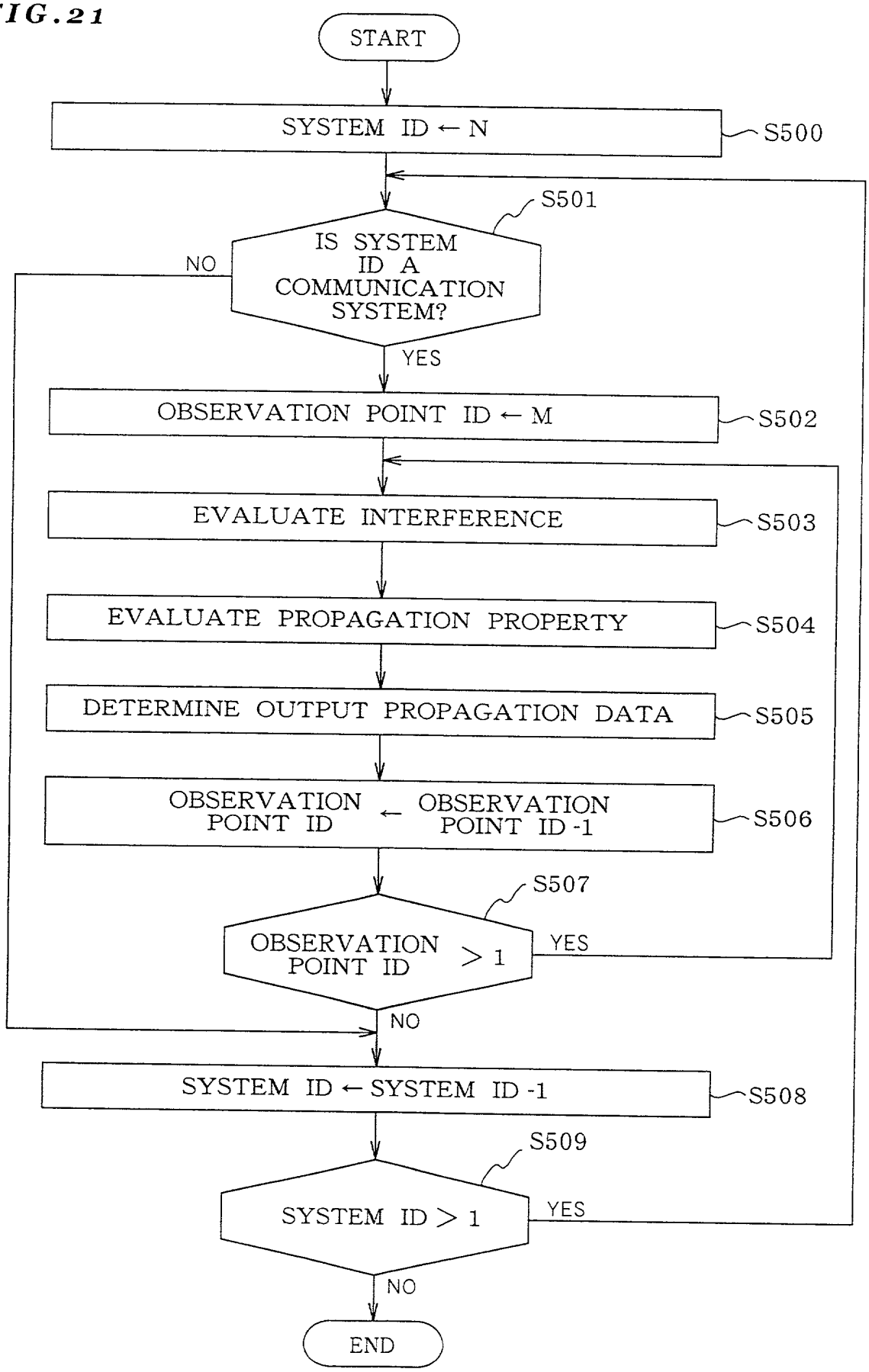

START
OBSERVATION POINT ID ← M
S300
SYSTEM ID ← N
S301
INTERFERENCE ELECTRIC POWER ← SUM OF RECEIPT ELECTRIC POWER IN SYSTEMS OTHER THAN SYSTEM ID
S302
SIGNAL-TO-INTERFERENCE RATIO OF SYSTEM ID (OBSERVATION POINT ID) ← (RECEIPT ELECTRIC POWER /EACH INTERFERENCE ELECTRIC POWER)
S303
SYSTEM ID ← SYSTEM ID-1
S304
S305
SYSTEM ID > 1
YES
NO
OBSERVATION POINT ID ← OBSERVATION POINT ID-1
S306
S307
YES
OBSERVATION POINT ID > 1
NO
END

FIG.20

	SYSTEM ID=1					SYSTEM ID=2					SYSTEM ID=3				
OBSERVATION POINT ID	RECEIPT ELECTRIC POWER	TOTAL INTER-FERENCE ELECTRIC POWER	TOTAL CI RATIO	IN-DIVIDUAL CI RATIO (ID=2)	IN-DIVIDUA CI RATIO (ID=3)	RECEIPT ELECTRIC POWER	TOTAL INTER-FERENCE ELECTRIC POWER	TOTAL CI RATIO	IN-DIVIDUAL CI RATIO (ID=1)	IN-DIVIDUA CI RATIO (ID=3)	RECEIPT ELECTRIC POWER	TOTAL INTER-FERENCE ELECTRIC POWER	TOTAL CI RATIO	IN-DIVIDUAL CI RATIO (ID=1)	IN-DIVIDUA CI RATIO (ID=2)
1	-60dBm	-85dBm	25dB	28dB	28dB	-88dBm	-60dBm	-28dB	-28dB	0dB	-88dBm	-60dBm	-28dB	-28dB	0dB
2	-65dBm	-86dBm	21dB	23dB	25dB	-88dBm	-65dBm	-23dB	-23dB	2dB	-90dBm	-65dBm	-25dB	-25dB	-2dB
3	-68dBm	-70dBm	2dB	2dB	20dB	-70dBm	-68dBm	-2dB	-2dB	18dB	-88dBm	-66dBm	-22dB	-20dB	-18dB
4	-72dBm	-84dBm	12dB	16dB	14dB	-88dBm	-72dBm	-16dB	-16dB	-2dB	-86dBm	-72dBm	-14dB	-14dB	2dB
5	-88dBm	-70dBm	-18dB	-18dB	0dB	-70dBm	-85dBm	15dB	18dB	18dB	-88dBm	-70dBm	-18dB	0dB	-18dB
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
M															

FIG.21


START
SYSTEM ID ← N
S500
S501
IS SYSTEM ID A COMMUNICATION SYSTEM?
NO
YES
OBSERVATION POINT ID ← M
S502
EVALUATE INTERFERENCE
S503
EVALUATE PROPAGATION PROPERTY
S504
DETERMINE OUTPUT PROPAGATION DATA
S505
OBSERVATION POINT ID ← OBSERVATION POINT ID -1
S506
S507
OBSERVATION POINT ID > 1
YES
NO
SYSTEM ID ← SYSTEM ID -1
S508
S509
SYSTEM ID > 1
YES
NO
END

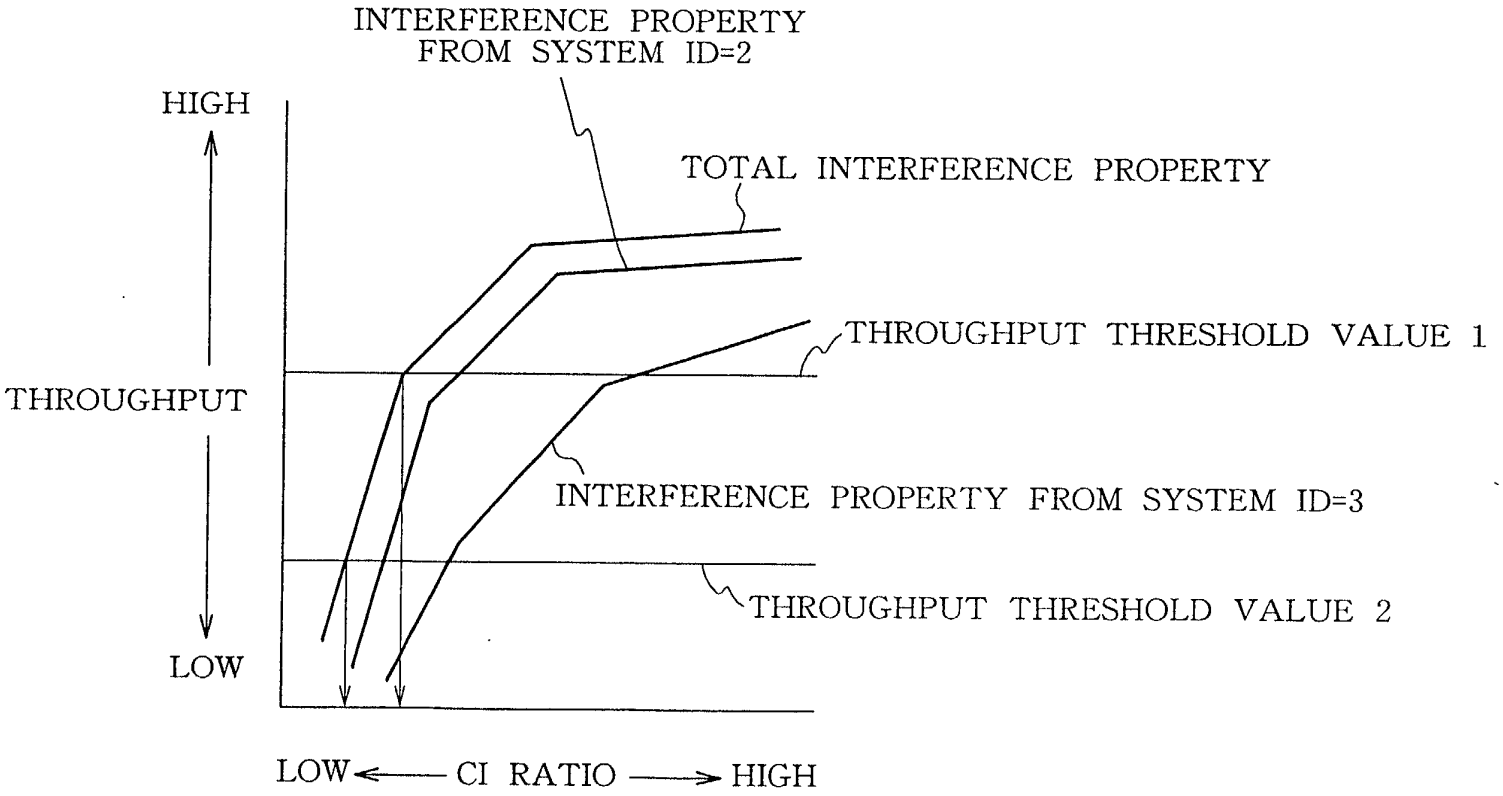

INTERFERENCE PROPERTY
FROM SYSTEM ID=2
HIGH
TOTAL INTERFERENCE PROPERTY
THROUGHPUT THRESHOLD VALUE 1
THROUGHPUT
INTERFERENCE PROPERTY FROM SYSTEM ID=3
THROUGHPUT THRESHOLD VALUE 2
LOW
LOW ← CI RATIO → HIGH

FIG.23

OBSERVATION AREA						COMMUNICATION POSSIBILITY		
HEIGHT ABOVE FLOOR	OBSERVATION POINT ID	x1	x2	y1	y2	SYSTEM ID=1	SYSTEM ID=2	SYSTEM ID=3
100 cm	1	0 cm	10 cm	0 cm	10 cm	C	A	B
	2	0 cm	10 cm	10 cm	20 cm	A	D	C
	3	0 cm	10 cm	20 cm	30 cm	D	C	D
	4	0 cm	10 cm	30 cm	40 cm	B	B	A
	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•

FIG.24

INTERFERENCE DEGRADATION LEVEL / RECEIPT POSSIBILITY	LARGE	MIDDLE	SMALL
VERY GOOD	D	B	A
GOOD	D	C	B
POSSIBLE	D	D	C
IMPOSSIBLE	D	D	D

FIG.25

COLOR NUMBER	NAME
CL000	LIGHT RED
CL001	LIGHT YELLOW
CL002	LIGHT GREEN
CL003	LIGHT BLUE
CL004	SLIGHTLY DARK RED
CL005	SLIGHTLY DARK YELLOW
CL006	SLIGHTLY DARK GREEN
CL007	SLIGHTLY DARK BLUE

COLOR NUMBER	NAME
CL008	SEMI-DARK RED
CL009	SEMI-DARK YELLOW
CL010	SEMI-DARK GREEN
CL011	SEMI-DARK BLUE
CL012	DARK RED
CL013	DARK YELLOW
CL014	DARK GREEN
CL015	DARK BLUE

FIG.26

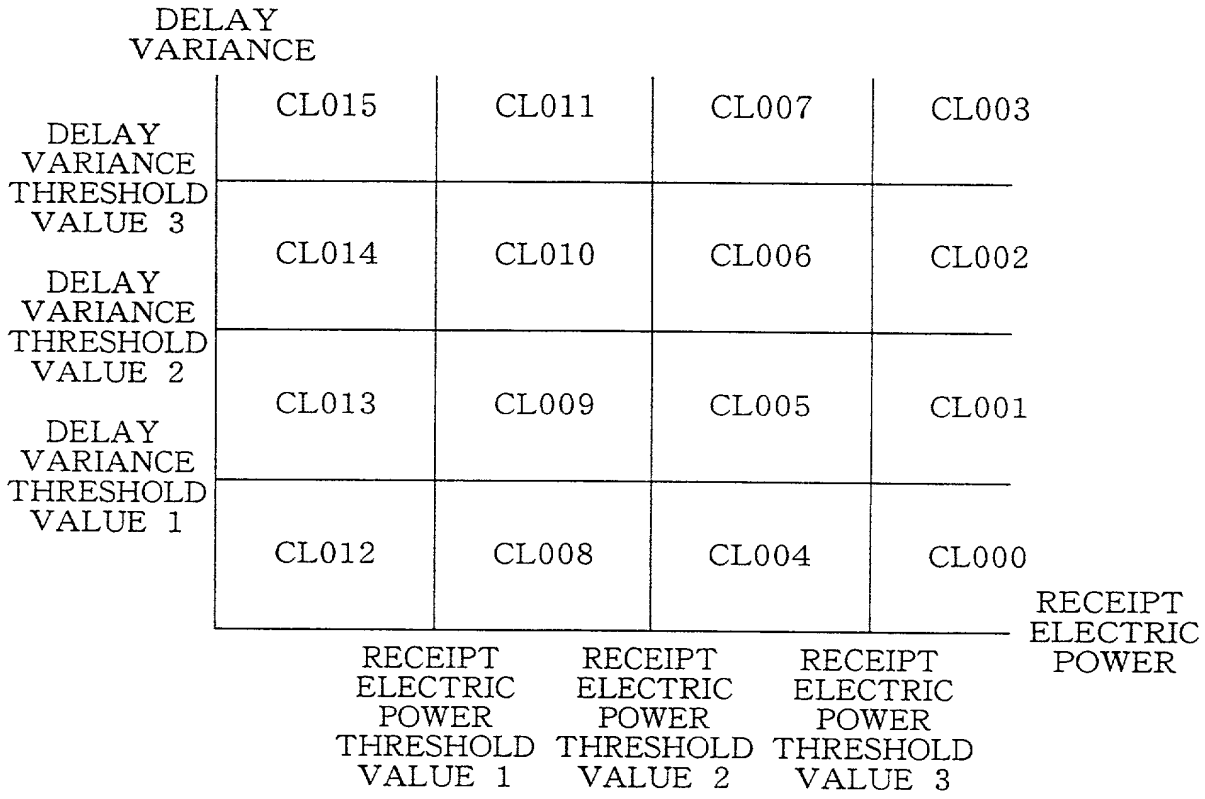

DELAY VARIANCE
CL015
CL011
CL007
CL003
DELAY VARIANCE THRESHOLD VALUE 3
CL014
CL010
CL006
CL002
DELAY VARIANCE THRESHOLD VALUE 2
CL013
CL009
CL005
CL001
DELAY VARIANCE THRESHOLD VALUE 1
CL012
CL008
CL004
CL000
RECEIPT ELECTRIC POWER
RECEIPT ELECTRIC POWER THRESHOLD VALUE 1
RECEIPT ELECTRIC POWER THRESHOLD VALUE 2
RECEIPT ELECTRIC POWER THRESHOLD VALUE 3

FIG.27

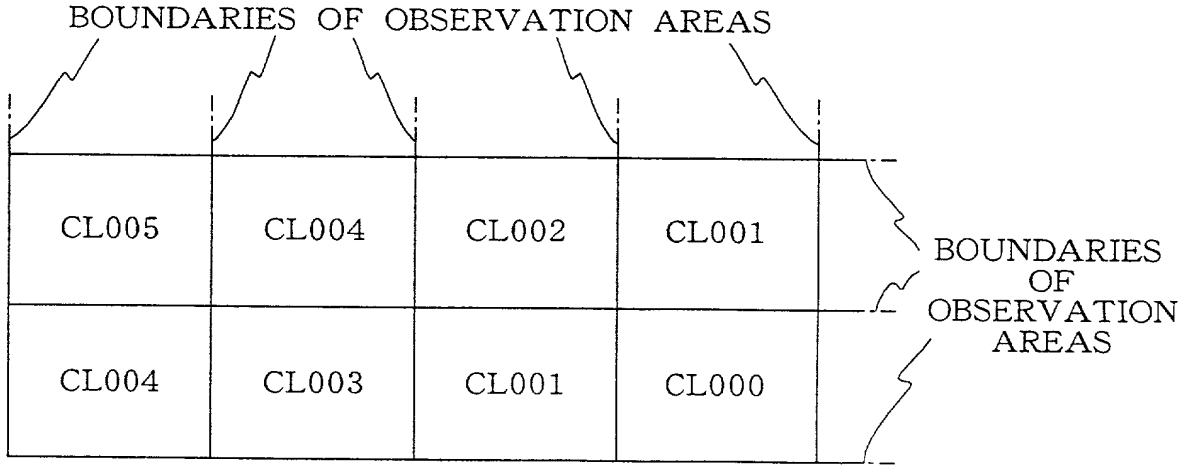

BOUNDARIES OF OBSERVATION AREAS
CL005
CL004
CL002
CL001
CL004
CL003
CL001
CL000
BOUNDARIES OF OBSERVATION AREAS

FIG.28

COLOR NUMBER	NAME
CL000	RED
CL001	YELLOWISH RED
CL002	REDDISH YELLOW
CL003	YELLOW
CL004	BLUISH YELLOW
CL005	YELLOWISH BLUE
CL006	BLUE
CL007	GREENISH BLUE

COLOR NUMBER	NAME
CL008	BLUISH GREEN
CL009	GREEN
CL010	REDDISH GREEN
CL011	GREENISH RED
CL012	PALE RED
CL013	PALE YELLOW
CL014	PALE GREEN
CL015	PALE BLUE

FIG.29

DELAY VARIANCE	RECEIPT ELECTRIC POWER THRESHOLD VALUE 1	RECEIPT ELECTRIC POWER THRESHOLD VALUE 2	RECEIPT ELECTRIC POWER THRESHOLD VALUE 3	RECEIPT ELECTRIC POWER
DELAY VARIANCE THRESHOLD VALUE 3	CL006	CL007	CL008	CL009
DELAY VARIANCE THRESHOLD VALUE 2	CL005	CL015	CL014	CL010
DELAY VARIANCE THRESHOLD VALUE 1	CL004	CL013	CL012	CL011
	CL003	CL002	CL001	CL000

FIG.30

INTERFERENCE DEGRADATION LEVEL / RECEIPT POSSIBILITY	LARGE	MIDDLE	SMALL
VERY GOOD	CL002	CL001	CL000
GOOD	CL006	CL005	CL004
POSSIBLE	CL010	CL009	CL008
IMPOSSIBLE	CL014	CL013	CL012

FIG.31

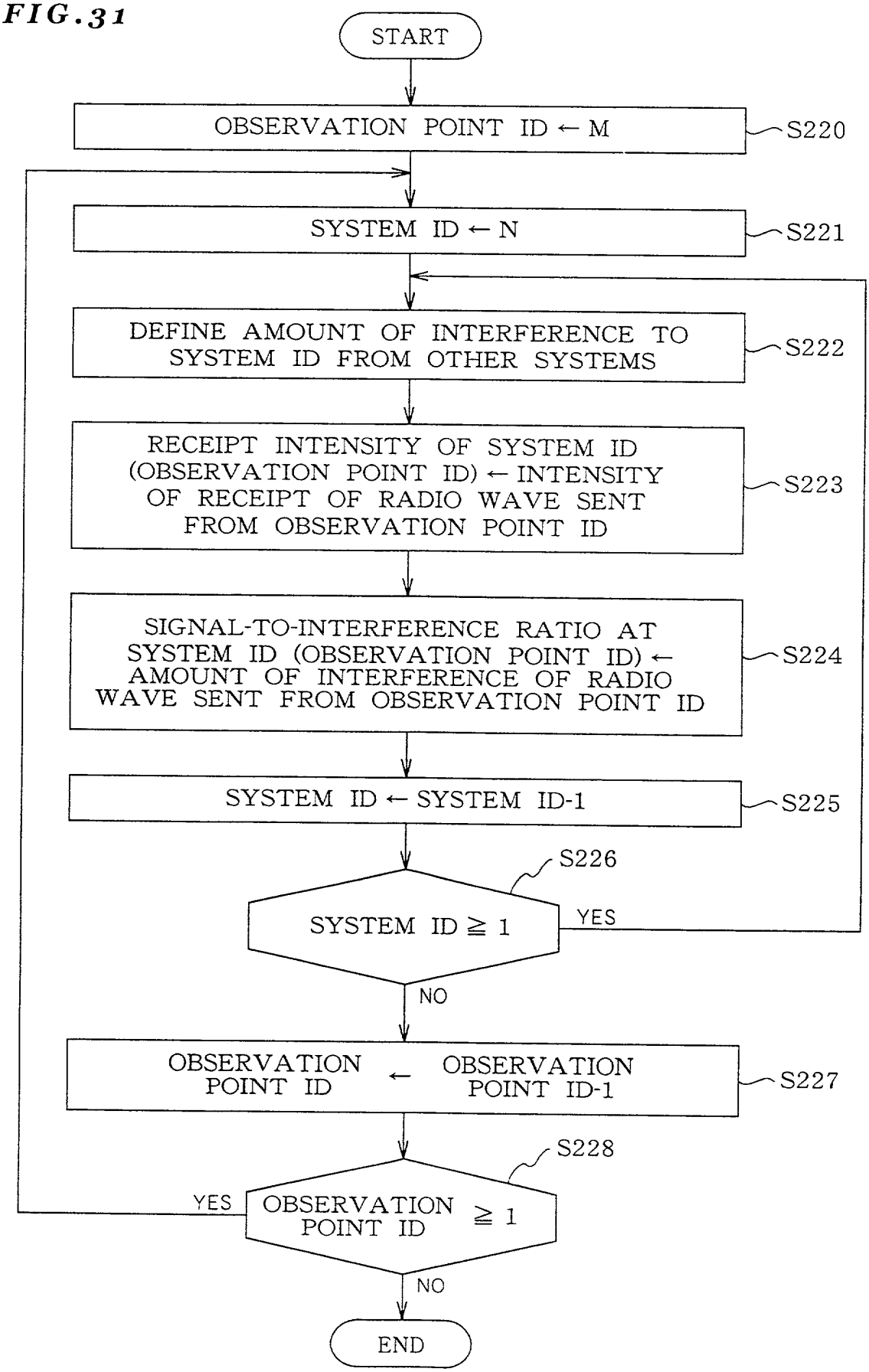

START
OBSERVATION POINT ID ← M
S220
SYSTEM ID ← N
S221
DEFINE AMOUNT OF INTERFERENCE TO SYSTEM ID FROM OTHER SYSTEMS
S222
RECEIPT INTENSITY OF SYSTEM ID (OBSERVATION POINT ID) ← INTENSITY OF RECEIPT OF RADIO WAVE SENT FROM OBSERVATION POINT ID
S223
SIGNAL-TO-INTERFERENCE RATIO AT SYSTEM ID (OBSERVATION POINT ID) ← AMOUNT OF INTERFERENCE OF RADIO WAVE SENT FROM OBSERVATION POINT ID
S224
SYSTEM ID ← SYSTEM ID-1
S225
S226
SYSTEM ID ≧ 1
YES
NO
OBSERVATION POINT ID ← OBSERVATION POINT ID-1
S227
S228
YES
OBSERVATION POINT ID ≧ 1
NO
END

FIG.32

OBSERVATION POINT ID	SYSTEM ID=1			SYSTEM ID=2
	TOTAL INTERFERENCE ELECTRIC POWER	RECEIPT ELECTRIC POWER	SENDING POINT CI RATIO	• • •
1	−70 dBm	−60 dBm	10 dB	• • •
2	−70 dBm	−65 dBm	5 dB	• • •
3	−70 dBm	−68 dBm	2 dB	• • •
4	−70 dBm	−72 dBm	−2 dB	• • •
5	−70 dBm	−88 dBm	−18 dB	• • •
• • •	• • •	• • •	• • •	• • •
M				

OBSERVATION POINT ID	SYSTEM ID=1			SYSTEM ID=2
	SENDING POINT CI RATIO INTERFERENCE DEGRADATION LEVEL	TOTAL CI RATIO INTERFERENCE DEGRADATION LEVEL	MIN (TOTAL CI RATIO, SENDING POINT CI RATIO) INTERFERENCE DEGRADATION LEVEL	
1	10 dB MIDDLE	25 dB SMALL	10 dB MIDDLE	
2	5 dB LARGE	21 dB SMALL	5 dB LARGE	
3	2 dB LARGE	2 dB SMALL	2 dB LARGE	
4	-2 dB LARGE	12 dB MIDDLE	-2 dB LARGE	
5	-18 dB LARGE	-18 dB LARGE	-18 dB LARGE	
⋮	⋮	⋮	⋮	
M				

↑ INTERFERENCE DEGRADATION LEVEL FOR ONE-WAY COMMUNICATION OF EACH OBSERVATION POINT→INTERFERENCE DEGRADATION LEVEL OF SENDING POINT ID ENTIFIABLE BY SYSTEM ID

↑ INTERFERENCE DEGRADATION LEVEL FOR ONE-WAY COMMUNICATION OF SENDING POINT IDENTIFIABLE BY SYSTEM ID→EACH OBSERVATION POINT

↑ INTERFERENCE DEGRADATION LEVEL FOR TWO-WAY COMMUNICATION BETWEEN SENDING POINT IDENTIFIABLE BY SYSTEM ID AND EACH OBSERVATION POINT

FIG.33

FIG.34

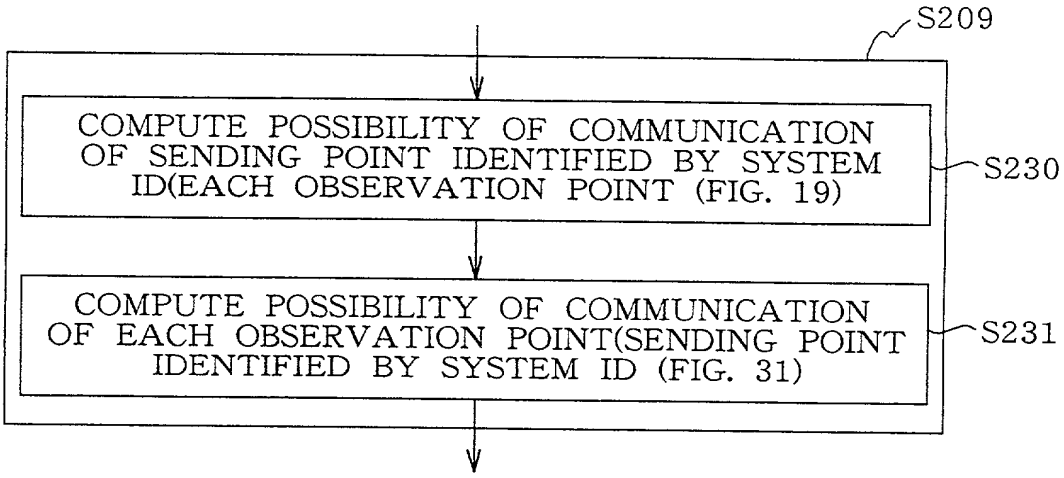


FIG.35

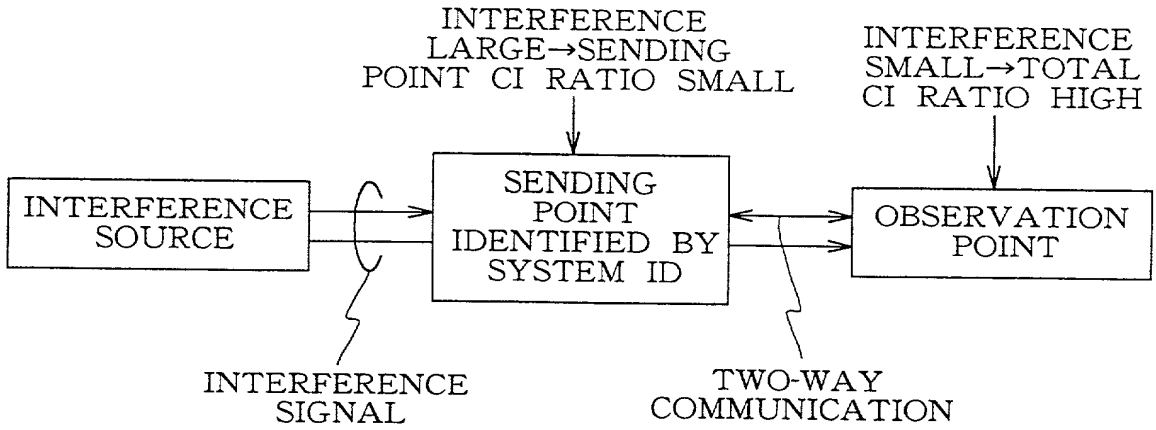


FIG.36